

A1
from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:32, and SEQ ID NO:33, wherein said protein elicits an immune response against a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:31, and SEQ ID NO:34.

A2 2 8'. (Once amended) [The protein of Claim 1, wherein said parasite comprises *D. immitis*]
An isolated protein comprising a *D. immitis* astacin metalloendopeptidase protein.

9/10/21
A3
11. (Once amended) The protein of Claim 1, wherein said protein comprises at least a portion of at least one amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:31 and SEQ ID NO:34, wherein said portion elicits an immune response against a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:31, and SEQ ID NO:34 [is encoded by a nucleic acid molecule which hybridizes under stringent conditions with a nucleic acid molecule selected from the group consisting of nDiMPA1₁₂₉₉, nDiMPA2₂₁₂₆, L3 nDiMPA3₂₂₉₂, L3 nDiMPA3₂₀₇₆, adult nDiMPA3₂₀₃₂, and adult nDiMPA3₂₀₂₈].

9/10/21
A4
16. (Once amended) A therapeutic composition for protecting an animal from disease caused by a parasite, said parasite being susceptible to an inhibitor of an astacin metalloendopeptidase, said therapeutic composition comprising at least one protective compound selected from the group consisting of:

AK
(a) an isolated [parasite] astacin metalloendopeptidase protein[;] encoded by a nucleic acid molecule that hybridizes under stringent conditions to the complement of a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:32, and SEQ ID NO:33; and

(b) an isolated protein having an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:31, and SEQ ID NO:34, or a homolog thereof, wherein said homolog has an at least about 7 contiguous amino acid region identical in sequence to a 7 contiguous amino acid region of an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:31, and SEQ ID NO:34; and

(c) an [anti-parasite astacin metalloendopeptidase] antibody that selectively binds to a protein comprising a *D. immitis* astacin metalloendopeptidase protein[; and an inhibitor of astacin metalloendopeptidase activity identified by its ability to inhibit parasite astacin metalloendopeptidase activity of said protein].

AS
19. (Once amended). The composition of Claim 16, wherein said [disease comprises]therapeutic composition protects an animal from heartworm infection.

Please add new claim 25 to read as follows:

25. (new) An isolated protein having an amino acid sequence selected from the group consisting of SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:31, and SEQ ID NO:34,